



**Response to Ofcom Call for Information on
3.8-4.2 GHz**

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WinnForum Response to Ofcom Call for Information on 3.8-4.2 GHz

1 Introduction

The Wireless Innovation Forum (WinnForum or the Forum) hereby responds to Ofcom's Call for Input on the topic of "3.8-4.2 GHz band: Opportunities for Innovation."

WinnForum is an international non-profit organisation driving technology innovation in commercial, civil, and defence communications around the world. In 2014, WinnForum created the Spectrum Sharing Committee, which concentrates on shaping and implementing the U.S. Federal Communications Commission's regulations for three-tiered spectrum sharing in the 3550-3700 MHz (CBRS) band. The Committee presently has broad participation from over 50 organisational stakeholders in the new 3.5 GHz band, including wireless operators, Spectrum Access System developers, equipment manufacturers, satellite operators, Wireless Internet Service Providers (WISPs), utilities, the U.S. government, and others.

WinnForum understands that the use cases, regulatory constraints, and objectives for the 3.8-4.2 GHz band in the UK are different from the U.S. 3.5 GHz band, and that specific solutions devised for the U.S. 3.5 GHz band may not be directly applicable to the 3.8-4.2 GHz band in the UK. However, we also believe that the experience we have gained through the process of assessing technical challenges of multi-tier spectrum sharing is relevant to the questions posed in your Call for Input and to the general principles expressed in the Ofcom Spectrum Sharing Framework. Accordingly, we offer below our responses to your questions.

2 WinnForum Responses to Questions Posed in the Call for Input

Question 1: Given the nature of the incumbents and their use of the spectrum, what new types of applications do you foresee could access this spectrum on a shared basis? Please provide details on the potential applications and their characteristics of use as identified in the spectrum sharing framework.

Response: WinnForum does not have an opinion on the specific shared-spectrum applications that should be deployed in the 3.8-4.2 GHz band. Instead, we believe that the most efficient and innovative uses of the spectrum arise from rules that are technology and service neutral. Technologies and services are evolving rapidly, much faster than the time scales achievable in rulemakings. The technical decisions that seem clear today may become obsolete in view of new technical developments and it is likely that rulemakings will be unable to follow developments in a timely way due to vastly differing time scales. Employing a flexible regulatory framework will lower regulatory barriers to entry and promote technological innovation

through easier and faster access to spectrum, enabling incumbents and entrepreneurs to pursue new business opportunities and bringing consequent benefits to citizens and consumers. The Forum encourages Ofcom to adopt a flexible technology-neutral regulatory framework for the 3.8-4.2 GHz band that permits a wide range of potential applications operated under rules that will adequately protect incumbent services and thereby enable the efficient use of spectrum. The minimum necessary technical restrictions should be adopted that will provide adequate protections against harmful interference to incumbent operations.

Question 2: Based on information provided in this Section, can you identify any barriers to enhanced sharing in the 3.8 GHz to 4.2 GHz band? Please use the Spectrum Sharing Framework, which identifies four types of barriers to spectrum sharing: lack of information; market barriers; technology barriers; and authorisation barriers.

Response: WinnForum considers harmonised standards to be an important stepping-stone toward the broad deployment of wireless communications worldwide. A potential market and technology barrier for the 3.8-4.2 GHz band is the lack of standards for this band for technologies and systems other than its current uses (fixed and fixed-satellite). However, with time, and with the adoption of a flexible regulatory framework, interest in this band will lead to the creation and adoption of suitable standards. We are seeing this effect in the U.S. 3550-3700 MHz band.

With regard to information, WinnForum believes that the role of receiver parameters in standards, and their related consideration in spectrum engineering, should receive greater prominence in order to enhance spectrum efficiency and to help maximise value to the economy and society. The incumbent uses in the 3.8-4.2 GHz band are particularly applicable to this approach, because the systems are in well-defined locations, with well-defined antenna and receiver characteristics. Detailed information on their operations, such as that available through Ofcom's Interactive Data portal, is an excellent step toward facilitating co-existence studies and maximising spectrum utilization for shared services.

With regard to authorisation barriers, we encourage Ofcom to consider dynamic coordination methods, such as those employed for TV white space and the more dynamic Spectrum Access System approach adopted in the 3550-3700 MHz band in the U.S. We support the use of networked and synchronised databases accessed with CBRS device (CBSD) location information as a key enabler for shared spectrum use that mitigates potential interference to incumbent users. Real-time, dynamic spectrum authorisations can be delegated to such systems, assuming they are operated under a sufficiently orderly, yet flexible, regulatory framework.

Question 3: Do you agree with our initial assessment of a potential application of a tiered authorisation approach in this band?

Response: Our experience with devising solutions to the challenges and the specifications for the entities and interfaces that will be used to implement tiered access approach in the U.S.

3550-3700 MHz band has been positive to date. Some aspects of the rules in the CBRS band have yet to be fully assessed; however, even though coordination between users and coexistence in a dynamic environment is challenging, our member companies are committed to working within the rules available to us, and we are confident that any issues may be solved using technological or policy based solutions.

In CBRS, incumbent operators are Tier 1, and must be protected. Tier 2 operators are granted a licence for a specific amount of spectrum in a specific geographic area for a specific amount of time (e.g., three years), and are protected from interference from Tier 3, yet must avoid causing interference to Tier 1. Lastly, Tier 3 users access spectrum on an opportunistic basis, but receive no interference protections and must not cause interference to Tiers 1 or 2. On the other hand, a portion of the band has been set aside for Tier 3 use only.

Beyond Tier 1 (incumbent services, including fixed-satellite and military radar), which will remain in the band, we are seeing significant interest in both Tiers 2 and 3. Tier 2 offers some assurances of prioritised access. We are also seeing substantial interest in Tier 3, because of the flexibility and speed-to-deployment offered under this framework. Operators may rapidly deploy small-cell systems in offices, shops, and residences, for example, with minimal regulatory burden beyond registering with, and gaining spectrum authorisation from a Spectrum Access System (which is an automated process being standardized in the WinnForum).

Based on our experience so far, the tiered approach shows strong promise of benefits for a wide range of users, including incumbents. While the specific three-tiered approach described above applies to the U.S. 3550-3700 MHz band, we believe that different tiered approaches based on the specific requirements and constraints that are present in this band in the U.K., using different sets of rights and responsibilities, may also be suitable for consideration by Ofcom. While recognising these differences, we suggest the rules are harmonised so that common equipment/technology standards can be written to facilitate global adoption, while conforming to local rules.

Question 4: Should a potential future tiered authorisation approach to spectrum access in the 3.8 GHz to 4.2 GHz band accommodate changes from incumbent services of the spectrum? I.e. should new licences or variations to existing fixed link and satellite earth station licences be allowed to continue on a first-come-first-served co-ordinated basis?

Response: WinnForum has no consensus opinion on this question.

3 Summary

WinnForum appreciates the opportunity to comment on the proposed spectrum sharing framework in the 3.8-4.2 GHz band. We believe Ofcom's initial efforts to begin a dialogue to

implement multi-tier spectrum sharing the 3.8-4.2 GHz band will eventually enable significant broadband benefits to the citizens of the UK, while not disrupting incumbent operations in the band. We look forward to monitoring developments in this band specifically, and with regard to Ofcom's Spectrum Sharing Framework more generally.

We understand that the use cases, regulatory constraints, and objectives for the 3.8-4.2 GHz band in the UK are quite different from the US 3.5 GHz. We further understand that specific solutions devised for the US 3.5 GHz band may not be directly applicable for this specific band in the UK. However, we believe that some of the experience that we have gained through assessing technical challenges of spectrum sharing, defining requirements, and creating technical reports, technical specifications, test specifications, and other guidelines, may be helpful to Ofcom as you proceed with your evaluation of inputs on the UK 3.8-4.2 GHz band. Therefore, we would like to invite Ofcom to establish a liaison relationship with us, through which we may communicate our expertise.